

United States Marine Corps

Road Map



The road to success
**Refrigeration
Mechanic**
1169



DRAFT



TRAINING AND EDUCATION CONTINUUM

What is a Training and Education (T&E) Continuum?

T&E Continuums were developed to provide a roadmap for the training and education of Marines in their military occupational specialty (MOS). The goal of the T&E Continuum is to develop the best possible Marine, whether it is a first term or career Marine.

What is a T&E MOS Roadmap?

MOS Roadmaps are just what the name implies – a roadmap through the T&E Continuum from Private through MGySgt/SgtMaj - a roadmap to success in the Marine Corps.

Do I have to follow the Roadmap?

Yes and no. The roadmap has four major sub-areas:

- Skill Progression (MOS)
- Common Skills & Professional Military Education (PME)
- Billet Progression & Unit Training
- Voluntary Education (VoEd)

Some of the training is mandatory, for example entry-level training (Boot Camp, MCT, MOS School, etc...). Some may be directed by your chain of command and some is voluntary. We recommend you find a mentor that can help you along the way, or you can seek assistance from your OIC/SNCOIC. Roadmaps are a guide, but as always there are several ways to get where you want to go.

What does the roadmap do for me?

Two things:

1. Provides you a guide to success as a Marine and towards technical mastery.
2. Provides you with an education that will transfer to civilian life when you decide to leave the Marine Corps.

How do I get started?

You already have. All your training up to this

As we mentioned earlier roadmaps have four major sub-areas that we will briefly explain here.

Skills Progression Training is training that will make you a better Marine in your MOS. It is a combination of formal schools, Marine Corps Institute (MCI) courses, National Standard Certification testing, and civilian education that develops your technical proficiency. It is progressive in that you will learn things as you need them and can apply them to your billet and mission.

Common Skills and PME. This is training that makes you a better Marine. PME requirements are already well established in the Marine Corps. It consists of resident courses, MCIs and required reading. The Corporal's Course, Sergeant's Course, etc... are not mandatory, but it is important for your career and growth as a leader to attend. These courses are designed to teach you what you need to know to be a Cpl or Sgt, so you should attend as soon as, or before, you are promoted.

Billet Assignment and Unit Training is hands-on experience; there is no better training. Billet progression provides you with the opportunity to develop by accepting new, more demanding responsibilities and performing new, more difficult tasks. Unit training as prescribed in the Training & Readiness (T&R) manual focuses on the skills you need to accomplish in your MOS that require a collective effort and aids the commander in preparing his unit for combat operations.

Voluntary Education was designed to provide you an uncomplicated way to complete a degree while making you a better Marine. The three major considerations of the VoEd roadmap was class availability (especially while deployed), use of free electives, and education required as you progress in rank and billet assignments.

Private - PFC

1st

Yea

SKILL PROGRESSION TRAINING

ACE Recommended Credit

- Basic Refrigeration Mechanics Course⁽¹⁾
SH Basic Electricity

(ACE Identifier)

(MC-1730-0006) 2

Theory

3 SH Refrigeration A/C

Lab

2 SH Refrigeration A/C

- MCI (1161) Funds of Refrigeration ⁽¹⁾
SH

(MC-1730-0005) 0

- Complete EPA 608 & 609 certifications for
refrigerant recovery and processing ⁽¹⁾

COMMON SKILLS TRAINING / PME

Recommended Credit

- Enroll in Uniformed Services Military Apprenticeship
Recruit Training Program USMAP (0666M) ⁽¹⁾

3 SH Drafting

ACE

4 SH (1) PhysFit
0 SH (1)

(2) Marksmanship
Orienteering

- Marine Combat Training ⁽¹⁾

(MC-2204-0105) 3

SH Military Skills

- MCI (3420E) Personal Financial Mgmt

(MC-1401-0009) 1

SH Financial Management

- MCI (0210B) Terrorism for Marines

(MC-1606-0010) 1

SH Intro to Terrorism

BULLET ASSIGNMENT / UNIT TRAINING

- Complete Jan-Bell Qualification in MC MAP ⁽¹⁾

0 SH

- Mechanic with Division Wingman FSSG unit

- Complete Military Academic Skills Program (MASP) if required

- Unit training should focus on the collective events established in the

- Read 2 books from the Marine Reading List

VOLUNTARY EDUCATION

Credit

- * College Algebra

ACE Recommended

3 SH Math

- * Denotes College Course

- ⁽¹⁾Denotes Entry-Level Training

Credit Tally for:

Applied Science "Technical Studies" Associates Degree

Arts and Sciences Electives 30 SH Minimum			Applied Professional
Humanities	Social Sciences/History	Natural Science/Math	30 SH Maximum a.k.a. (Free Electives)
		(2) Basic Electricity (3) * College Algebra	(3) Refrigeration A/C Theory (2) Refrigeration A/C Lab (3) * Drafting (2) Marksmanship (1) Orienteering (3) Military Skills (1) Finance Mgmt (1) Terrorism
(0) Total	(0) Total	(5) Total	(16) Total



1161 Road Map

PFC-LCpl

— 2nd Year —



SKILL PROGRESSION TRAINING

Recommended Credit

* Technical Graphics II

- MCI (1143) Interior Wiring Engineering

- MCI (1141A) Marine Electrician (MC-1714-0020)

- Complete 1000 hours in USMAP

(ACE Identifier)

3 SH Drafting

(MC-1601-0033)

ACE

3 SH

0 SH

(1000 hours total)

COMMON SKILLS TRAINING / PME

ACE

Recommended Credit

- MCI (0033) Fundamentals of M.C. Ldrshp SH Supervisory management

(MC-1406-0023)

1

- MCI (3316E) Basic Nutrition

(MC-1729-0041)

1 SH Nutrition

- Complete Gray Belt Qualification in MCMAP 0 SH

- Read 2 books from the Marine Reading List

B ILLET ASSIGNMENT / UNIT TRAINING

- Mechanic with Division, Wing or FSSG unit

- Lance Corporals may apply for Marine Security Guard (MSG) duty as a "watch stander"

- Unit training should focus on the collective events established in the Training & Readiness

Manual for this specific grade

VOLUNTARY EDUCATION

ACE Recommended Credit

* Speech 101

3 SH Oral

Communications

* English 101

3 SH English

Credit Tally for:

Applied Science "Technical Studies" Associates Degree

Arts and Sciences Electives 30 SH Minimum			Applied Professional
Humanities	Social Sciences/History	Natural Science/Math	30 SH Maximum a.k.a. (Free Electives)
(3) * English Comp I (3) * Oral Communication		(2) Basic Electricity (3) * College Algebra	(3) Refrigeration A/C Theory (2) Refrigeration A/C Lab (3) * Drafting (2) Marksmanship (1) Orienteering (3) Military Skills (1) Finance Mgmt (1) Terrorism (3) * Drafting (3) Engineering (1) Supervisory Management (1) Nutrition
(6) Total	(0) Total	(5) Total	(24) Total

1161 Road Map

LCpl-Cpl

—3rd Year—



SKILL PROGRESSION TRAINING

(ACE Identifier) **ACE**

Recommended Credit

* Computer Aided Drafting

3 SH

Drafting

- MCI (0410B) MIMMS

(MC-1717-0011)

0 SH

- Complete an additional 1000 hours in USMAP

(2000 hours

COMMON SKILLS TRAINING / PME

ACE

Recommended Credit

- Complete Resident Corporal's Course

(MC-1405-0051)

4

SH (3) Management (1) Mil Stud

- MCI (3422A) Basic Pay and Allowances

(MC-1401-0016)

1

SH Finance

- MCI (001A) Principles Instruction f/NCOs (MC-1406-0028) 3 SH

Instructional Methodology

- Complete Green Belt Qualification in MCMAP 0 SH

- Read 2 books from the Marine Reading List

- Mechanic with Division, Wing or PSSG unit

- Lance Corporals and Corporals may apply for MSG duty as a

"watch stander"

- Unit training should focus on the collective events established

in the Training &

Readiness Manual for this specific grade

VOLUNTARY EDUCATION

ACE Recommended

Credit

* US History I

3 SH History

* Technical Writing

3 SH English

Credit Tally for:

Applied Science "Technical Studies" Associates Degree

Arts and Sciences Electives 30 SH Minimum			Applied Professional	
Humanities	Social Sciences/History	Natural Science/Math	30 SH Maximum a.k.a. (Free Electives)	
(3) * English Comp I (3) * Speech (3) * Tech Writing	(3) * US History I	(2) Basic Electricity (3) * College Algebra	(3) Refrigeration A/C Theory (2) Refrigeration A/C Lab (3) * Drafting (2) Marksmanship (1) Orienteering (3) Military Skills (1) Finance Mgmt (1) Terrorism (3) * Drafting	(3) Engineering (1) Sup Management (1) Nutrition (3) * Drafting (3) Management (1) Military Studies (1) Finance (3) Instructional Methodology
(9) Total	(3) Total	(5) Total	(35) Total	

1161 Road Map

Cpl - Sgt

4th Year



SKILL PROGRESSION TRAINING

(ACE Identifier)

ACE Recommended Credit

- Complete an additional 1000 hours in USMAP total)

(3000 hours

COMMON SKILLS TRAINING / PME

ACE Recommended Credit

Credit

- MCI (8010) Sgt's Dist Educ Prog (MC-2204-0127)
Mgmt (1) Lang

8 SH (5) Mil Science, (2)

- MCI (0201) Intelligence Brief: SW Asia
International Studies

(MC-1511-0001)

2 SH

- Complete Green Belt Instructor Course

(MC-1406-0048)

3 SH

BILLET ASSIGNMENT / UNIT TRAINING

- Read 2 books from the Marine Reading List

- Sergeants may apply for MSG, Drill Instructor, Recruiter or Formal School Instructor (check

the ACE guide for recommended college credits for these specific special duty billets)

- Unit training should focus on the collective events established in the Training & Readiness

Manual for this specific grade

ACE Recommended

Credit

* US History II

3 SH History

* Economics I

3 SH

Economics

* Arts/Music/Philosophy Elective

3 SH Humanities

* Physical Science w/lab Elective

4 SH Natural Sciences

Credit Tally for:

Applied Science "Technical Studies" Associates Degree

Arts and Sciences Electives 30 SH Minimum			Applied Professional	
Humanities	Social Sciences/History	Natural Science/Math	30 SH Maximum a.k.a. (Free Electives)	
(3) * English Comp I (3) * Speech (1) Language (3) * Tech Writing (3) * Arts/Music/Phil	(3) * US History I (3) * US History II (2) International studies (3) * Economics I	(2) Basic Electricity (3) * College Algebra (4) * Science Elective	(3) Refrigeration A/C Theory (2) Refrigeration A/C Lab (3) * Drafting (2) Marksmanship (1) Orienteering (3) Military Skills (1) Finance Mgmt (1) Terrorism (3) * Drafting (3) Engineering	(1) Management (1) Nutrition (3) * Drafting (3) Management (1) Military Studies (1) Finance (3) Instructional Methodology (5) Military Science (2) Management (3) Martial Arts Inst
(13) Total	(11) Total	(9) Total	(45) Total	

****This completes the requirements for an Associate in Applied Science "Technical Studies" as prescribed by a SOCMAR School****

1161 Road Map

5th-7th

Sergeant



Year

SKILL PROGRESSION TRAINING

(ACE Identifier)

ACE

Recommended Credit

- Intermediate Refrigeration Course developed Yet to be
- MCI (1344C) Construction Print Reading Architecture Blueprinting (MC-1601-0041) 3 SH
- MCI (0414A) Grnd Maint Mgmt f/Supers Management (MC-1717-0010) 1 SH
- Engineering Materials and Processes 3 SH Logistics
- Attend resident Sergeant's Course (MC-2204-0103) 5 SH
- Complete an additional 2000 hours in USMAP (3000 hours total)
- MCI (7100) SNCO Career DEP (MC-2204-0139) 4 SH (3) Mil Sci (1) Ldrshp
- MCI (0342G) Operations/Guerrilla Units Military Science (MC-2204-0133) 3 SH
- MCI (0335C) Infantry Patrolling (MC-2204-0136) 1 SH Physical

Education ASSIGNMENT / UNIT TRAINING

- Mech (0017) Weapons Division, Wing, FSSG or I&I Unit 0 SH (Pre-req f/Serge Course)
- f/Serge Course may apply for MSG, Drill Instructor, Recruiter or Formal Schooler
- Complete Brown and Black Belt Qualification 0 SH
- Read 12 books per year from the College Reading List for these specific special duty billets)
- Unit training should focus on the collective events established in the

Training & Readiness

ACE Recommended

Manual for this specific grade

- * Psychology 101 3 SH Psychology
- * Pre-Calculus 3 SH
- Mathematics
- * Introduction to Statistics 3 SH
- Mathematics
- * Financial Management 3 UL SH
- Finance
- * Educational Psychology 3 SH

Credit Tally for: Bachelor of Science/Liberal Arts Degree

Arts and Sciences Electives 60 SH Minimum (21 Upper Level)			Applied Professional 60 SH Maximum (9 Upper Level) a.k.a. (Free Electives)	
Humanities	Social Sciences/History	Natural Science/Math		
* English Comp (3) * Speech (1) Language (3) * Tech Writing (3) * Arts/Music/Phil (3) * UL English (3) * UL Language	(3) * US History I (3) * US History II (2) International studies (3) * Economics I (3) * Psychology (3) * Psychology (3) * UL Psychology	(2) Basic Electricity (3) * College Algebra (4) * Sci Elective (3) * Statistics (3) * Pre-Calculus (3) * UL Finance	(3) Refrigeration A/C Theory (2) Refrigeration A/C Lab (3) * Drafting (2) Marksmanship (1) Orienteering (3) Military Skills (1) Finance Mgmt (1) Terrorism (3) * Drafting (3) Engineering (1) Management (1) Nutrition (3) * Drafting (3) Management	(4) Military Studies (1) Finance (3) Instructional Methodology (5) Military Science (2) Management (3) Martial Arts Instructor (3) Architectural Blueprinting (1) Management (3) * Logistics (2) Leadership (3) Military Science (3) Military Science (1) Leadership (3) Military Science
(19) Total	(20) Total	(18) Total	(64) Total	

1161 Road Map

Staff Sergeant

8th-13th

Year



SKILL PROGRESSION TRAINING

(ACE Identifier) ACE

Recommended Credit

- MCI (1328E) Utilities Officers/Chiefs Engineering (MC-1710-0048) 3 SH

- MCI (345C) Logs/Embark Specialist Records Management (MC-1408-0030) 1 SH

- Complete an additional 1000 hours in USMAP (6000 hours total)

COMMON SKILLS TRAINING / PME

(ACE)

(Contact Base Education Office to finalize apprenticeship documentation) (MC-2204-0074) 9

SH (6) Ml Stud, (2) Ldrshp

(1) Physical Fitness

- MCI (3412) Field Budget Formulation (MC-1401-0011) 1

SH Finance

- MCI (8200) SNCO Advanced DEP (MC-2204-0142) 3

SH Military Science of with Division, Wing, FSSG or I&I unit

- Staff Sergeant may apply from MBE, Drill Instructor, Recruiter or Formal School Instructor

(check the ACE guide for recommended college credits for these specific special duty billets)

- Unit training should focus on the collective events established in the

Training & Readiness

ACE Recommended Credit

- Apply for Degree Completion Program and/or continue with the following courses:

* History Elective

3 UL SH History

* Ethics: Theory/Practice

3 UL SH

Humanities

* Natural Science/Math Elective

3 UL SH Natural

Science/Math

* Logistics Engineering

3 UL SH Logistics

* Transportation and Distribution Systems

3 UL SH Logistics

* Logistics Management

3 UL SH Logistics

Credit Tally for:

Bachelor of Science/Liberal Arts Degree

Arts and Sciences Electives 60 SH Minimum (21 Upper Level)			Applied Professional 60 SH Maximum (9 Upper Level) a.k.a. (Free Electives)		
Humanities	Social Sciences/History	Natural Science/Math			
(3) * English Comp (3) * Speech (1) Language (3) * Tech Writing (3) * Arts/Music (3) * UL English (3) * UL Language (3) * UL Humans	(3) * US History I (3) * US History II (2) International studies (3) * Economics I (3) * Psychology (3) * Psychology (3) * UL Psychology (3) * UL History	(2) Basic Electricity (3) * College Algebra (4) * Sci Elective (3) * Pre-Calculus (3) * Statistics (3) * UL Finance (3) * UL Elective	(3) Refer A/C Theory (2) Refer A/C Lab (3) * Drafting (2) Marksmanship (1) Orienteering (3) Military Skills (1) Finance Mgmt (1) Terrorism (3) * Drafting (3) Engineering (1) Management (1) Nutrition	(3) * Drafting (3) Management (1) Military Studies (1) Finance (3) Instruction Methods (5) Military Science (2) Management (3) Martial Arts Inst (3) Arch Blueprinting (1) Management (3) * Logistics (2) Leadership	(3) Military History (3) Military Science (1) Leadership (3) Military Science (3) Engineering (1) Records Mgmt (1) Finance (6) Military Studies (2) Leadership (3) Military Science (3) * UL Logistics (3) * UL Logistics (3) * UL Logistics
(22) Total	(23) Total	(21) Total	(89) Total		

**** This completes the requirement for a Bachelor of Science in Liberal Arts as prescribed by a SOCMAR School****

1161 Road Map

Gunnery Sergeant



**13th-18th
Year**

SKILL PROGRESSION TRAINING

(ACE Identifier)

ACE Recommended Credit

- Attend Utilities Chief's Course (MC-1710-0035) 3 SH

Mechanical Electrical Eng

COMMON SKILLS TRAINING / PME

ACE Recommended Credit

Credit

- Attend the SNCO Advanced Course (MC-2204-0076) 13 SH (7)

Mil Science (3) Ldrshp

(2) Phys Fit (1) Public Speaking

- MCI (7400) Warfighting Skills (DEP) (MC-2204-0112) 2 SH

Military Studies

BILLET ASSIGNMENT / UNIT TRAINING

- Read 2 books per year in the Marine Reading List

- Maintenance Chief with Division, Wing, FSSG or I&I unit

- Gunnery Sergeants may apply for MSG, Drill Instructor, Recruiter or Formal

School Instructor

(check the ACE guide for recommended college credits for these specific special

duty billets)

- Unit training should focus on the collective events established in the Training &

Readiness

MANUAL FOR THIS SPECIFIC GRADE

ACE Recommended Credit

- Listed below are the requirements for a Masters of Science in

"Management" degree

- (This roadmap has provided a foundation for entry into a Master's degree

program, this

particular program is available on-line with 2 weekend residency

requirements).

- Recommend application to an Advanced Degree Completion Program,

however, if not selected,

this degree program offers the greatest flexibility that we have found.

* Professional Leadership Development I (residency) 1 GL SH

Management

* Organizational Theory and Behavior 6 GL SH

Management

* Human Resource Management 3 GL SH Management

* Economic Issues in Organizations 3 GL SH Management

* Organizational Management and Leadership I 3 GL SH

Management

* Organizational Research 3 GL SH

Management

* Organizational Management and Leadership II 3 GL SH

Management

* Finance and Accounting for Managers 3 GL SH

Management

* Professional Leadership Development II (residency) 1 GL SH

Management

* Thesis/Applied Project 3 GL SH

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Master Sergeant



19th-22nd Year

SKILL PROGRESSION TRAINING

ACE

Recommended Credit

- Attend Marine Corps Logistics Education Program (MCLEP)

COMMON SKILLS TRAINING / PME

(ACE Identifier)ACE

Recommended Credit

- Attend the 1stSgt & MSgt seminar
- MCI (8510) Amphibious Warfare School (DEP) Phase I 5 SH (3) Mil Stud (2) Mgmt

(MC-2204-0113)

- MCI (8600) Amphibious Warfare School (DEP) Phase II 5 SH UL (3) Mil Stud (2) Mgmt

(MC-2204-0114)

- Read 2 books per year from the Marine Reading List

BILLET ASSIGNMENT / UNIT TRAINING

- Engineer Chief with Division, Wing, FSSG or I&I unit
- Special Duty recommendations: Senior Marine Instructor/Chief Instructor at a formal school;

Maintenance Analyst at Marine Corps Logistics Chain Analysis Team;
Production Chief at

MCCDC; or serve as the Occupational Field Monitor

- Unit training should focus on the collective events established in the Training & Readiness

Manual for this specific grade

VOLUNTARY EDUCATION

ACE Recommended Credit

- Continue to apply for Advanced Degree Completion and/or continue to pursue masters degree

1169 Road Map

Master Gunnery Sergeant



SKILL PROGRESSION TRAINING Recommended Credit

ACE

COMMON SKILLS TRAINING / PME Recommended Credit

(ACE Identifier)ACE

- Attend the SgtMaj & MGySgt Symposium
- Attend Russell Leadership Conference
- MCI (8800) Command & Staff College (DEP) 18 SH UL/GL (3) International Rel
(MC-1408-0025) (3) Mil Stud (3)
Org Mgmt
History (3) Theory of War (3) GL Mil
(3) GL National Security
- Read 2 books per year from the Marine Reading List

BILLET ASSIGNMENT / UNIT TRAINING

- Engineer Chief at a G-4, MEF, FSSG, Division, FMF Pacific or Atlantic
- Special duty recommendations: Joint Tour
- Unit training should focus on the collective events established in the Training & Readiness Manual for this specific grade

VOLUNTARY EDUCATION

- Continue to apply for Advanced Degree Completion and/or continue to pursue masters degree

1169 Road Map

NOTES FOR READING THE ROADMAP

General Information

1. Formal Military Schools and MCIs are listed in "BLACK".

2. Lower Level college courses (Freshmen/Sophomore) are listed in "BLUE".

3. Upper level (UL) college courses (Junior/Senior) are listed in Green.

4. American Council on Education (ACE) identifiers gives college and career counselors a reference to validate the recommended credits. The credits listed in this roadmap are current as of 16 January 2004. Updates to these can be found on-line at:

<http://www.militaryguides.acenet.edu>

Skill Progression

1. In addition to MCIs, and Formal MOS schools, certain MOSs can pass national certification testing: National Institute of Metallurgical Society (NIMS) for machinists, Students Excelling through National Standards of Excellence (SENSE) for welders, Automotive Service Excellence (ASE) for mechanics and technicians, etc...

2. Uniformed Services Military Apprenticeship Program (USMAP) is available to most active duty MOSs and is certified by the U.S. Department of Labor. This would qualify you as a journeyman apprentice which could mean a significantly higher starting salary in the civilian work force.

Common Skills/PME

1. This area covers training which is common to all Marines.

Billet Assignment/Unit Training

1. At division assignments you'll be conducting organizational level maintenance and this will give you a good feel for what it takes to fix equipment with limited time and resources.

2. At FSSG and wing assignments you'll

Voluntary Education

1. The voluntary education listed in the roadmap refers specifically to taking college level courses (MCIs and some PME are also "voluntary").

2. The degree program selected in the roadmap is just an example of one you could pursue. Many others are available through the SOCMAR network and can be found at:

<http://www.soc.aascu.org/socmar/HandbookM.html>

In selecting the degree program for each MOS, lots of things were taken into consideration (i.e. availability of courses on-line, residency requirements, or other types of correspondence, campus locations, allowable credit transfers from non-traditional learning such as testing (CLEP/DANTES), and experiential learning.

3. Testing can replace the requirement to attend most of the college courses listed in the roadmap. Base education centers offer CLEP and DANTES tests for active duty military at no cost. Study guides for testing for most of the courses are also available at the education centers.

4. ASE exams are also available at the education centers. DANTES will pay for active duty military to take 3 exams per semi-annual year (every 6 months). The tests are offered in the spring and fall of every year and do require, at present, a \$31.00 non-refundable registration fee. ASE exams require documentation of two years experience working in the automotive industry. (LAV, Tank, AAV, engineer, and MT mechanics usually fall in this category and USMAP can help to document this experience).

5. Tuition assistance (T/A) currently pays for 100% of college course tuition. Students must pay for books and study guides. Tuition rates at most community colleges are much cheaper than for 4 year universities. You should consider taking most of your lower level courses through them as it saves the Marine Corps a tremendous amount of money which can